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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,791	10/30/2003	Akihiro Tanaka	244692US2	8912
22850	7590	04/14/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			LEE, PATRICK J	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/695,791

Applicant(s)

TANAKA ET AL.

Examiner

Patrick J. Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 8, 13 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Labels "36" and "37" from figure 13 are not described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to because figure 13 has a label "31" described to be a light-emitting element. This appears to be erroneous because the element labeled "31" seems to be detecting light instead of emitting it. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

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abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. Figures 11-13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Information Disclosure Statement***

5. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner has cited the references on form PTO-892, they have not been considered.

***Specification***

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Objections***

7. Claim 8 is objected to because of the following informalities: the space in line 2 of claim 8 should be removed. Appropriate correction is required.

8. Claims 13 & 18 are objected to because of the following informalities: the phrase "same wiring" is vague because it can raise the question of "same as what?" Changing the wording to something similar to claim 5 "wiring commonly" would be acceptable. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

10. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such

omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: with respect to claim 1, the predetermined value could refer to any value at all. As a result, claim 1 and dependent claims 2-11 are rejected.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US 4,882,479 to Hino et al.

With respect to claim 1, Hino et al disclose an optical encoding device comprising laser (4) and detector (8) as a first optical detector, whose output changes with movement of disk (3a) with light and dark patterns formed by particles (2) at a pitch smaller than a predetermined value. Hino et al disclose detector (5) as a second optical detector whose output is constant with the movement of disk (3a). Arithmetic unit (9) and comparator (18) serve as a circuit that performs a calculation based on the outputs of detectors (5, 8).

13. Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by US 3,679,307 to Zoot et al.

With respect to claim 12, Zoot et al disclose a device comprising detector arrays (47,48) as a plurality of first photodiodes arranged in a first direction having a longer axis along a second direction substantially perpendicular to the first direction. Zoot et al also disclose detector arrays (49, 50) as a second photodiode arranged near lengthwise tips of first photodiodes (47, 48) and having a light detecting part having a longer axis along a first direction. Circuitry elements (76-79, 82-85) and processor (87) serve as a circuit that performs a calculation based on the outputs of photodiodes (47-50).

14. Claims 16-18 are rejected under 35 U.S.C. 102(a) as being anticipated by US 2003/0047673 A1 to Thorburn et al.

With respect to claims 16-17, Thorburn et al disclose a photodetector array comprising a plurality of first photodiodes (D1) and a plurality of second photodiodes (D2) disposed between first photodiodes (D1) with each of the photodiodes (D2) connected to a common wiring that reaches output pad (P2). Thorburn et al disclose a circuit comprising summing amplifier (1320) to perform a calculation based on the outputs of first and second photodiodes (D1, D2).

With respect to claim 18, Thorburn et al disclose every 4<sup>th</sup> photodiode connected to the same wiring as illustrated in figure 3.

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 2-6 & 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,882,479 to Hino et al in view of US 2003/0047673 A1 to Thorburn et al.

Hino et al disclose the device as described in the discussion of claim 1.

With respect to claim 2, Hino et al does not explicitly disclose the first optical detector (8) as having a plurality of first photodiodes and a plurality of wirings. However, Thorburn et al disclose a photodetector array comprising a plurality of first photodiodes (D1) connected to common wiring that reaches output pad (P1) and a plurality of second photodiodes (D2) disposed between first photodiodes (D1) with each of the photodiodes (D2) connected to a common wiring that reaches output pad (P2). To modify the teachings of Hino et al with those of Thorburn et al would have been obvious to one of ordinary skill in the art because the device taught by Thorburn et al is appropriate for monitoring periodic signals (see Thorburn et al paragraph [0002]), which would be appropriate for use in optical encoding devices where the signal is periodic.



With respect to claims 3-4, the modified Hino et al do not explicitly disclose the part as being larger than a pitch along the first direction. However, such would be obvious to one of ordinary skill in the art in order to appropriately detect the movement of the light and dark patterns.

With respect to claims 5-6, the modified Hino et al do not explicitly disclose a plurality of second photodiodes, but such would have been obvious to one of ordinary skill in the art as it would provide an appropriate light sensing device.

With respect to claim 9, the modified Hino et al disclose in Thorburn et al figure 3 that the wiring has a light connected to the center part of each second photodiode.

With respect to claims 10-11, the modified Hino et al do not explicitly disclose the signal processing as such, but such would have been obvious to one of ordinary skill in the art in order to utilize the optical signals to determine an appropriate position of the encoding disk.

18. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,679,307 to Zoot et al in view of US 2003/0047673 A1 to Thorburn et al.

Zoot et al disclose the device as described in the discussion of claim 12.

With respect to claim 13, Zoot does not explicitly disclose the fourth photodiode being connected to a same wiring. However, Thorburn et al disclose a photodetector array comprising a plurality of first photodiodes (D1) connected to common wiring that reaches output pad (P1) and a plurality of second photodiodes (D2) disposed between first photodiodes (D1) with each of the photodiodes (D2) connected to a common wiring that reaches output pad (P2). To modify the teachings of Zoot with those of Thorburn et

al would have been obvious to one of ordinary skill in the art because the device taught by Thorburn et al is appropriate for monitoring periodic signals (see Thorburn et al paragraph [0002]), which would be appropriate for use in optical encoding devices where the signal is periodic.

With respect to claims 14-15, the modified Zoot does not explicitly disclose the signal processing as such, but such would have been obvious to one of ordinary skill in the art in order to utilize the optical signals to determine an appropriate position of the encoding disk.

19. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0047673 A1 to Thorburn et al,

With respect to claims 19-20, Thorburn et al does not explicitly disclose the signal processing as such, but such would have been obvious to one of ordinary skill in the art in order to utilize the optical signals to determine an appropriate position of the encoding disk.

***Allowable Subject Matter***

20. Claims 7-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 7-8, the modified Hino et al doe not explicitly disclose the teaching that the second photodiode is located in between the first photodiodes.

**Conclusion**

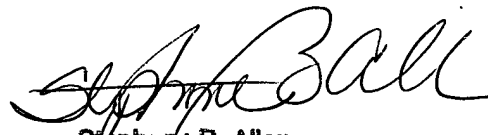
22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick J. Lee  
Examiner  
Art Unit 2878

PJL  
April 12<sup>th</sup>, 2005

  
Stephane B. Allen  
Primary Examiner